Functional Requirements

1. The system shall read through any provided .txt file

2. The system shall maintain exactly 100 memory locations for storing four-digit signed integer words. ex: +0000

3.The system shall read values from memory locations using addresses ranging from 0 to 99.

4.The system shall write values to memory locations using addresses ranging from 0 to 99.

5.The system shall load program instructions from text files into memory.

6.The system shall validate that all memory addresses are within the bounds of 0 to 99.

7.The system shall maintain a program counter that tracks the current instruction address.

8.The system shall increment the program counter by one after executing each instruction.

9.The system shall store strings 4 digits long with a + or - in front into memory ex: +0000

10.The system shall have an accumulator to temporarily hold a number string

11.The system shall decode each instruction into a two-digit opcode and two-digit address.

12.The system shall ADD a word from memory with the word in the accumulator and leave it in the accumulator when the opcode is 30

13.The system shall SUBTRACT a word from memory with the word in the accumulator and leave it in the accumulator when the opcode is 31

14.The system shall DIVIDE a word from the accumulator with a word in memory and leave it in the accumulator when the opcode is 32

15.The system shall MULTIPLY a word from the accumulator with a word in memory and leave it in the accumulator when the opcode is 33

Non functional requirements

1.The system shall provide clear error messages when invalid file paths are encountered.

2.The system shall provide clear error messages when malformed input data is encountered.

3.The system shall run on any computer that has java 8 installed

4.The system shall complete operations within 1 second